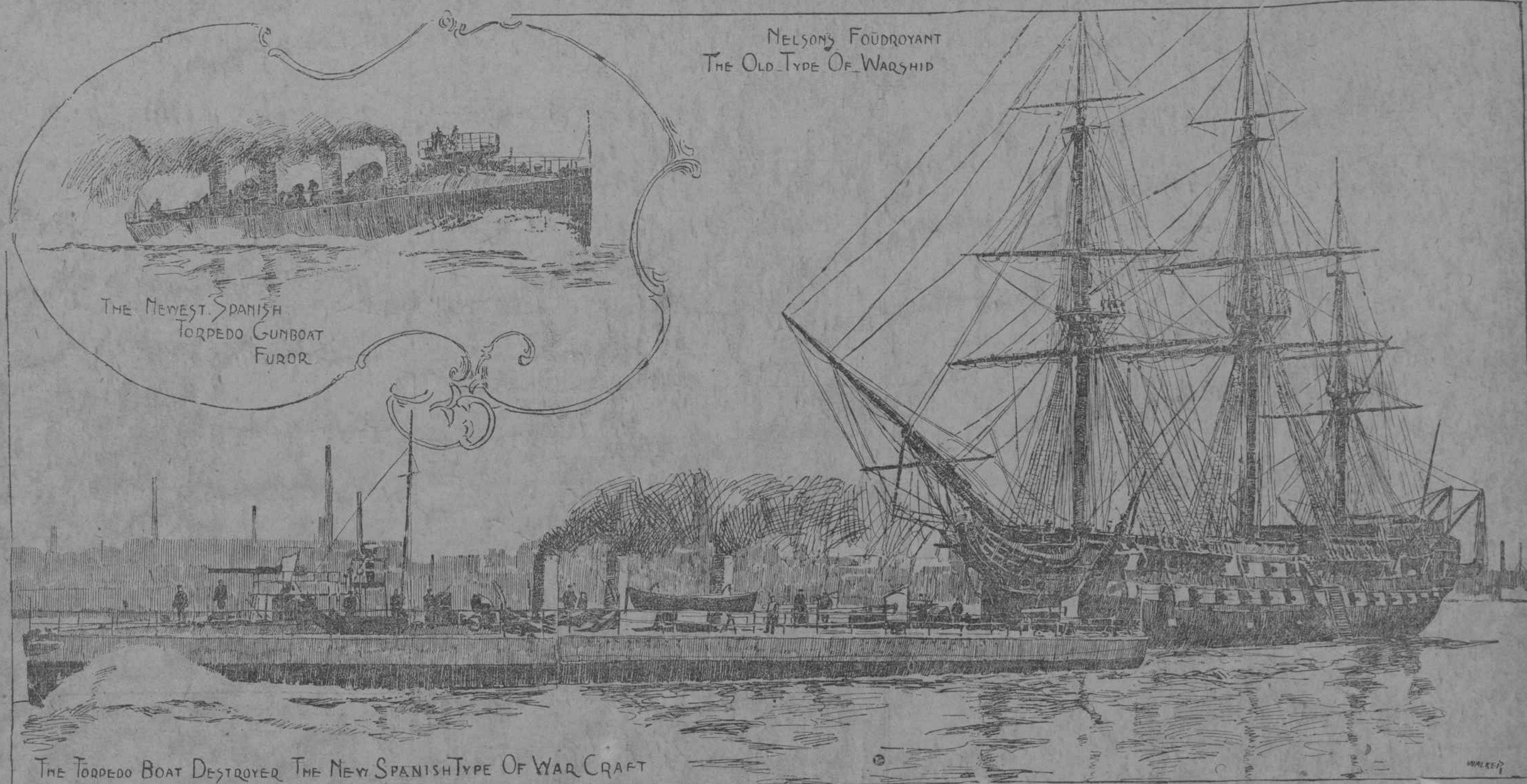


# SPAIN'S NEW UP-TO-DATE WAR CRAFT UNCLE SAM'S FISH-LIKE TORPEDO.

The Nation Which May Fight the United States Before Long Has Some of the Most Powerful and Most Modern War Vessels Afloat.



## The Wonderful Swimming Torpedo That Chases a Ship.

A torpedo has now been invented which will follow a warship about like a fish. It will seek her out whether lying still or steaming ahead, and if the warship attempts to escape by dodging out of the way this new torpedo will turn of its own accord and follow her until it finally hits her, and, exploding, sends her to the bottom.

This remarkable fish torpedo, which seeks its prey with relentless certainty and displays almost human intelligence in the persistence with which it follows a moving object, overcomes one of the most serious objections which naval officers now raise against the most perfect automobile torpedoes hitherto made. The "fish" torpedo, which in Europe is looked upon as one of the best known, is not expected to

average more than one hit in ten trials against a moving target like a ship at sea. If the sea be rough and the vessel aimed at be a considerable distance away this would be a conservative estimate of the number of Whiteheads that would hit. In actual war and when automobile torpedoes are fired at a fast battle ship under a full head of steam it is not supposed that one in twenty would hit her.

These torpedoes cost about \$5,000 apiece, and there are few war ships afloat that carry as many as a dozen of them. Unless aimed with the nicest precision and at a vessel within close range, they are almost certain to shoot past the object, while the action of waves and currents deflects them from a straight course and renders them powerless.

It is because of these objections to the automobile that the torpedo was invented carrying a wire astern with which it can be directed by the sender. This weapon, however, has many objections, not the least of which is that it can be seen to approach from the deck of an enemy.

All of these objections are overcome by the new torpedo which has been invented by C. D. Haskins, of Boston. The torpedo itself in its dynamic chamber, its firing apparatus and its motive power and machinery do not differ materially from other high-grade automobile torpedoes. Mr. Haskins' invention really consists of a magnetic attachment which is made to the steering apparatus, and which can be added to the machinery of other automobile torpedoes now in existence. This can

be done at a comparatively slight cost. The theory upon which the invention is founded is a simple one. It is known for instance that a great mass of iron and steel such as the modern battle ship consists of exerts a decided magnetic influence for a considerable distance in its immediate neighborhood.

Any compass or other magnetic device will thus disclose the near approach of a warship, and the delicate needle will begin to feel the influence of the approaching mass of iron and steel at a considerable distance. The actual zone of influence to which this magnetic force extends is estimated to be at least three hundred feet on all sides of a modern battle ship.

The greatest difficulty hitherto encountered has been to hit or come near the mark. This is due to the fact that in most cases, the torpedo boat and the target boat, or hostile ship, are moving either in opposite directions or at different rates of speed, or subject to change in direction, making the position of the target ambiguous or marksmanship ineffective.

There are two ways in which the percentage of successful attempts at hitting the target may be increased, and these are by making the aim more exact or by making the target larger. The latter is what, in effect, the invention of Mr. Haskins accomplishes.

Instead of aiming at the vessel direct, the operator of one of his automatic torpedoes need only aim to throw the projectile within the range of the magnetic influence of the vessel—say, within 200 feet of it in any direction, thus increasing the actual diameter of the target aimed at by 200 feet.

That his device will do this is the claim made by Mr. Haskins and his friends. After a series of laboratory tests with models it is reported that one of the devices was taken out in Boston Harbor on five occasions, where it "found" a big Cunarder coming into port, as well as several other vessels from 200 to 300 feet in length. Later the device was shown at Newport, when tests were made of several torpedoes before the Naval Board.

Mr. Haskins claims that his invention practically endows the torpedo with a self-directive power as great as though it were a sentient being. He says it is only necessary for the torpedo equipped with his invention to come within the radius of the

target's magnetic influence, and it will straightway make a bee-line for the target. The operation of the invention is somewhat as follows: The torpedo is first thrown in a straight line for the target, or in its direction. The steering apparatus is not set in motion until the torpedo arrives in the vicinity of the target vessel. The device once in motion, the Haskins invention is ready for action.

As soon as it reaches the area affected by the attractive force of the iron or steel hull of the vessel, the delicate mechanism of the invention operates upon a motor which controls the rudder, steering the torpedo in the direction of the strongest magnetic attraction. If the momentum of the projectile carries it past the line of the strongest attraction, as the target vessel moves, the rudder will be deflected to the right or left, as the case may be, and the course of the torpedo corrected to conform to the changed position of its object. Varying conditions may result in the course of the torpedo being a long sweeping curve, or a zigzag line, if the vessel tacks.

To secure for the gunboat throwing the torpedo immunity from its attack, which might ensue if no precautions were taken, the steering device is so arranged that it will not begin operations until the projectile is far enough away from the torpedo thrower to be outside its magnetic field.

The steering device invented by Mr. Haskins weighs about 125 pounds, and can be attached to any torpedo.

### FOR DEADHEADS ONLY.

Some Biblical Reminders for the Class Who Try to Work Railroads for Free Rides.

In the office of the assistant superintendent of the Delaware, Lackawanna & Western Railroad, Hoboken, N. J., hangs the following sign, printed in large letters. The sign is intended especially for railroad deadheads:

"IN THOSE DAYS THERE WERE NO PASSES. SEARCH THE SCRIPTURES.  
"Thou shalt not pass.—Num. 20-18.  
"Suffer not a man to pass.—Judah.  
"The wicked shall no more pass.—Nahum 1-13.  
"None shall ever pass.—Mark, 13-30.  
"Though they roar yet they shall not pass.—Jeremiah.  
"So he paid the fare and went.—Micah.  
"Verbum Sap."

## Four Swift Torpedo Boat Destroyers for Spain.

Spain, the country whose relations with the United States are a source of much anxiety, has a navy which contains some of the newest and most formidable warships afloat. Although she is but a second rate power, it must be remembered that her navy would at the first shock make her a serious antagonist for this country. The remarkable number of warships built or ordered this year by the Spanish Government shows that they are straining every nerve to prepare for a great naval conflict. The Cubans cannot fight at sea. Against whom are these preparations directed?

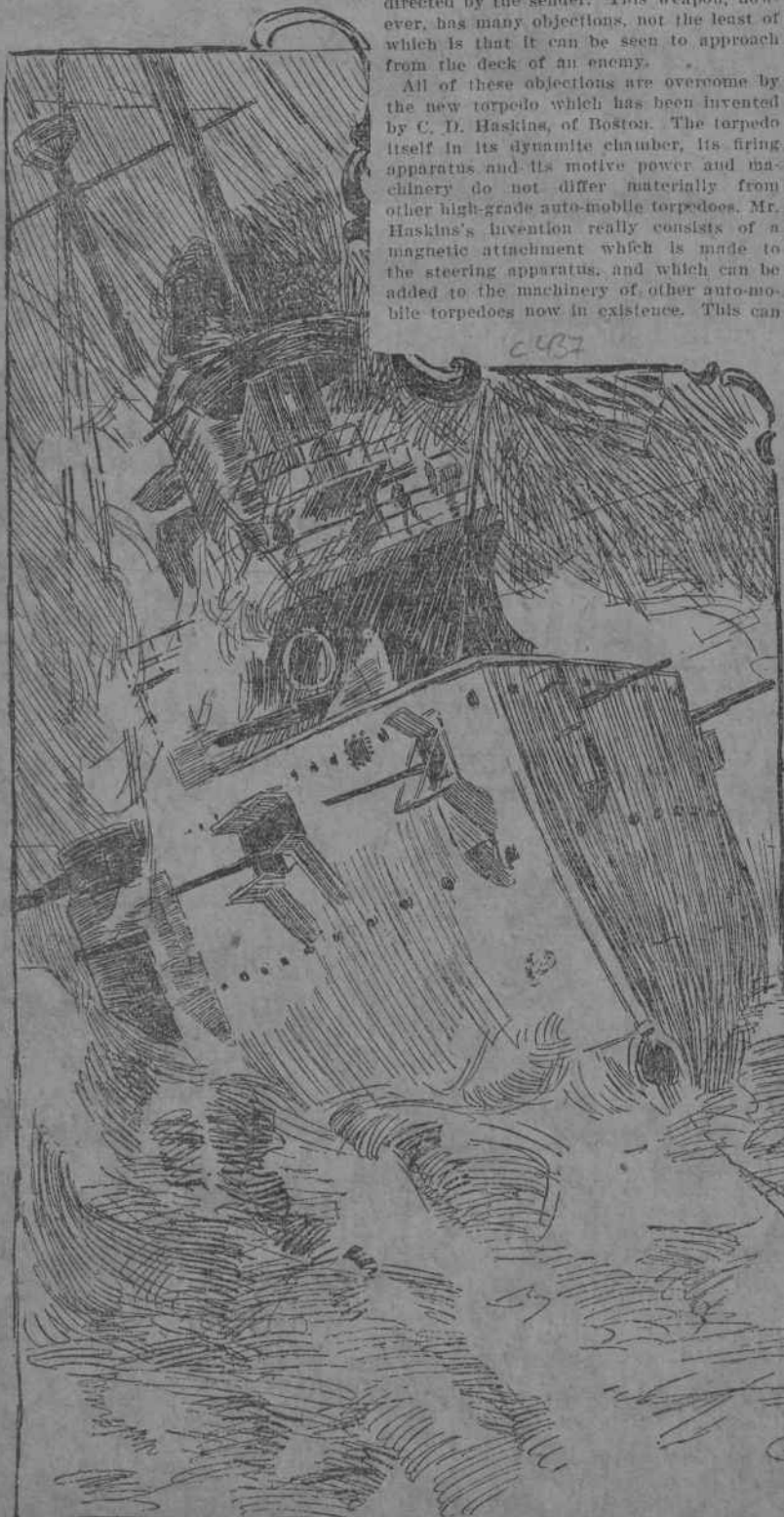
Despite her financial embarrassment Spain has recently done relatively more than any European power, with the exception of Great Britain, to strengthen her navy. At present there are no fewer than four torpedo boat destroyers in the hands of Messrs. James & George Thomson, Ltd., Clydebank, eight miles down the Clyde from Glasgow. This firm seems to have found much favor with Spain in the matter of war vessel construction, because it has built more ships for the Spanish navy than any other concern in the world. It was the Clydebank people who built for Spain the Queen Regent, launched some years ago, which unfortunately was totally wrecked, with the loss of the entire crew, about twelve months ago. It is believed, tanglers, indeed, Messrs. Thomson say they can build a better boat and with more improved appliances for foreign governments than the British Admiralty can, since they are not so tied down by official overseers, but are allowed to do the work well and without being harassed. However, as to the four torpedo boat destroyers on hand, the first couple have only this week completed their official trials, and these have been most successful in all respects. The dimensions of the vessels are 220 feet by 20 feet, and the engines are triple expansion, developing 6,000 horse power. The engines at the trials both in the measured mile and in the three hours' continuous steaming test worked smoothly, and with no heating. The internal appliances are of the most up-to-date character, special attention being paid to what is the general defect in all torpedo craft, namely, ventilation.

During the three hours' trial a speed of 28.25 knots was maintained throughout, and this with bunkers filled to the greatest capacity. The names of the two boats ready for handing over to the Spanish Government are the Furor and the Terror. As regards the second couple of destroyers, the contract for them was only signed about four months ago, but both are now well forward in frame, and, if no troubles with workmen crop up, the builders expect to place them in the water possibly this year, or at least early in 1901, so they will be soon ready for dispatch to Cuban waters. Messrs. Thomson secured the order, as they had promised the most rapid construction, and to meet the haste of the Spanish Government this couple will be launched with their engines on board. They will be five feet longer than the first pair and deeper, while the speed guaranteed is thirty knots—the highest yet promised any foreign government, excepting the destroyers recently constructed at Birkenhead for the Chilean Government. These two Spanish boats will be 225 feet by 22 feet by 13 feet, but the builders, with an eye to trade secrets, will say nothing about the engines further than mentioning the mean speed to be acquired. The boats will be named Andaz and Oaxida, and will be similar to the Furor and the Terror.

In general appearance they are like the British torpedo gunboats built and on hand for the Admiralty, but throughout their construction many improvements in detail have suggested themselves, chiefly with a view to rendering the vessels more habitable.

All sorts of rumors are to be added, with respect to further Spanish orders. In Great Britain, first it was rumored that the name of Messrs. Thomson, then the name of Messrs. Armstrong & Co., of Elswick, was mentioned in connection with the matter, and, finally, the Barrow shipbuilding concern was reported to have been approached. Undoubtedly, Spanish agents have been looking round the British yards, but it is doubtful whether they have placed any new orders. Cruisers take too long to build, and those who have war vessels for sale—and there are not many of them—demand prices which, except under absolute necessity, Spain is in her impoverished condition, unwilling to pay.

JULIAN HALPIN.  
London, Dec. 10.



### HOW THE NEW TORPEDO IS DRAWN TO ITS VICTIM

